

# Transmitter

## BiT – Barksdale Intelligent Transmitter

Series H455, 455, 452

### Features

- ▶ Lightweight, compact and all-welded rugged stainless steel construction
- ▶ High performance sensors for high accuracy
- ▶ Optional HART® communication protocol with diagnostics & field calibration, reducing maintenance time and cost; and 10:1 turndown ratio for re-ranging, maintaining high accuracy and allowing one part number for multiple pressure ranges
- ▶ High accuracy:  $\pm 0.1\%$  and  $\pm 0.25\%$  FSO, (L,H,R)
- ▶ cULus Certification for Ordinary Locations
- ▶ IP66 & IP67 and NEMA 4X Protection
- ▶ CE, CRN, NACE compliant and Superior EMC/EMI protection
- ▶ RoHS / REACH Compliant

### Applications

- ▶ Hydraulic and Pneumatic Product Testing
- ▶ Engine Testing
- ▶ Hydraulic Equipment
- ▶ O&G BOP Pressure Testing
- ▶ Acid Pumps
- ▶ Data Acquisition System
- ▶ Heavy Mobile Equipment Testing
- ▶ OEM Factory Acceptance Testing
- ▶ Pressure Data Loggers
- ▶ Mobile Pressure Test Labs



### General Specifications\*

<b>Accuracy</b> including Linearity, Hysteresis and Repeatability: at 75°F, Typical	$\pm 0.1\%$ of Calibrated FSO (Option [-A1]) $\pm 0.25\%$ of Calibrated FSO (Standard) $\pm 0.5\%$ of Calibrated FSO (Vacuum only [-23])	<b>Dynamic Response Time:</b> H455: 455 & 452:	<70 milliseconds <50 milliseconds
<b>Temperature Shift:</b>	Zero & Span: 0.0125% Per °F over the compensated temperature range	<b>Enclosure:</b>	All welded 300 series stainless steel. IP66 & IP67 and NEMA 4X rated. 316 Stainless steel (optional)
<b>Long Term Stability:</b>	$\pm 0.2\%$ FSO /year of calibration curve	<b>Wetted Parts:</b> Sensor:	17-4 PH Stainless steel (more than 10k psi) 316L Stainless steel (up to 10k psi) Inconel (optional: up to 10k psi) 17-4 PH Stainless Steel for -UL option (10k psi)
<b>Typical Life Cycle:</b>	100 million cycles	Fitting:	17-4 PH Stainless steel (all ranges) 316L Stainless steel and 718 Inconel (optional: up to 10k psi)
<b>Proof Pressure:</b>	2X range for up to 7500 psi models 1.5X range for 7500 - 30000 psi models	<b>Media</b> General:	Gas, vapor, liquid and viscous fluids [-Z17]
<b>Input:</b> H455: 455*: 452*:	Excitation voltage: 9 to 30 VDC Excitation voltage: 9 to 30 VDC Excitation voltage: 12 to 30 VDC * (SELV, PELV), Class II Power Supply	Corrosive and Acidic: (up to 10,000 psi)	718 Inconel wetted material, NACE [-NC]; and 316L Stainless Steel, NACE [-SS]
<b>Supply Current:</b>  H455 & 455:  452:	  20mA max.  20mA max.	<b>Pressure Connection:</b>	13 available options. Refer to product configurator for available connections and ranges.
<b>Output:</b> H455:  455:  452:	Output: 4–20 mA with HART® Protocol Full Scale Output: 20 mA $\pm 1\%$ Zero output: 4 mA $\pm 1\%$  Output: 4–20 mA Full Scale Output: 20 mA $\pm 1\%$ Zero output: 4 mA $\pm 1\%$  Output: 1–5 VDC Full scale output: 5.0 VDC $\pm 1\%$ Zero output: 1.0 VDC $\pm 1\%$	<b>Electrical Connection:</b>	3 conductors for voltage output series and 2 conductors for current output series, 18 AWG, 80" (2 m) long with integral strain relief and case ground (standard). Jacketed cable (optional). Halogen free wires and cable.
		<b>Temperature Ranges:</b> Operating (Ambient): Compensated: Media: Storage:	-40 to +176 °F (-40 to +80 °C) 0 to +165 °F (-18 to +74 °C) -40 to +176 °F (-40 to +80 °C) -40 to +185 °F (-40 to +85 °C)
		<b>Vibration:</b>	10 g's, 10-500 Hz, MIL-STD 202, Method 204, Cond. A
		<b>Shock:</b>	50 g's, 11 mS, MIL-STD 202 Method 213, Cond. G.

\* See product configurator for additional options.

## General Specifications\* cont.

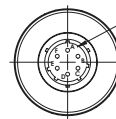
<b>Approvals:</b> cULus:	cULus approved for ordinary locations (UL 61010-1)
<b>HART® Protocol:</b>  Turndown Ratio:  Analog Output Calibration:  Sensor Trim:  Diagnostics:	HART® 7.6  10:1 (Full scale output rangeability)  Adjustable zero and span of 4-20mA. Full scale range must be ≥ (calibrated span / 10)  Sensor zero and full scale trim  Transmitter failure indicated by off-scale analog signals to alarm the user  See HART Installation and Operation Manual 272438 for detailed information
<b>Compliances:</b>	CE, CRN (refer to drawing # 272479 for applicable models) NACE (316L SS or 718 Inconel wetted material)

<b>Electromagnetic Compatibility (EMC)</b> IEC/EN 55011:	Emission & radiated emission for class A limits
IEC/EN 61000-4-2:	Electrostatic discharge (ESD) test - contact discharge +/-4 kV, Air discharge +/-8 kV
IEC/EN 61000-4-3:	Radiated RF, EM field immunity 80mhz-1ghz, 3v/M
IEC/EN 61000-4-4: H455:	EFT (Burst) Test, +/-2 kV
455 & 452:	EFT (Burst) Test, +/-1 kV
IEC/EN 61000-4-5: H455:	Surge Test, +/-1kV between line and earth ground
455 & 452:	Surge test not applicable; Class II power supply used at input of the device
IEC/EN 61000-4-6:	RF Immunity, 150 kHz – 80 MHz, 3V
<b>Weight:</b>	16 Ounces (453 grams)
<b>Warranty:</b>	1 Year warranty

\* See product configurator for additional options.

## Wiring Code

TABLE 1. FREE LEAD WIRES AND CONNECTOR PIN CONNECTIONS				
MODEL NO.	RED/A/1	BLACK/B/2	GREEN/D/4	WHITE/C/3
H455	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
455	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
452	+ EXCITATION	- EXCITATION	EARTH GROUND	VOLTAGE OUTPUT



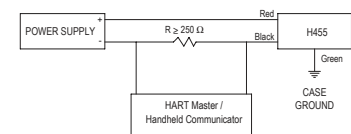
\* 'A' TO 'F' ARE PINS FOR CONNECTION REFER TABLE 1.

TABLE 2. JACKETED CABLE WIRE CONNECTIONS (-J Option)				
MODEL NO.	WHITE	BROWN	GREEN	YELLOW
H455	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
455	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
452	+ EXCITATION	- EXCITATION	EARTH GROUND	VOLTAGE OUTPUT

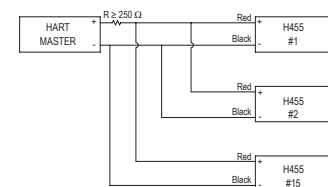
TABLE 3. DEUTSCH CONNECTOR PIN CONNECTIONS (-D3 & -D4 Option)					
MODEL NO.	CONNECTOR	PIN A/1	PIN B/2	PIN C/3	PIN D/4
CURRENT	D3	+ EXCITATION	- EXCITATION	EARTH GROUND	N/A
VOLTAGE	D3	+ EXCITATION	- EXCITATION	VOLTAGE OUTPUT	N/A
CURRENT	D4	- EXCITATION	+ EXCITATION	EARTH GROUND	N/A
VOLTAGE	D4	- EXCITATION	+ EXCITATION	VOLTAGE OUTPUT	EARTH GROUND

### CONFIGURATION WITH HART

#### Point to Point



#### Multi Drop

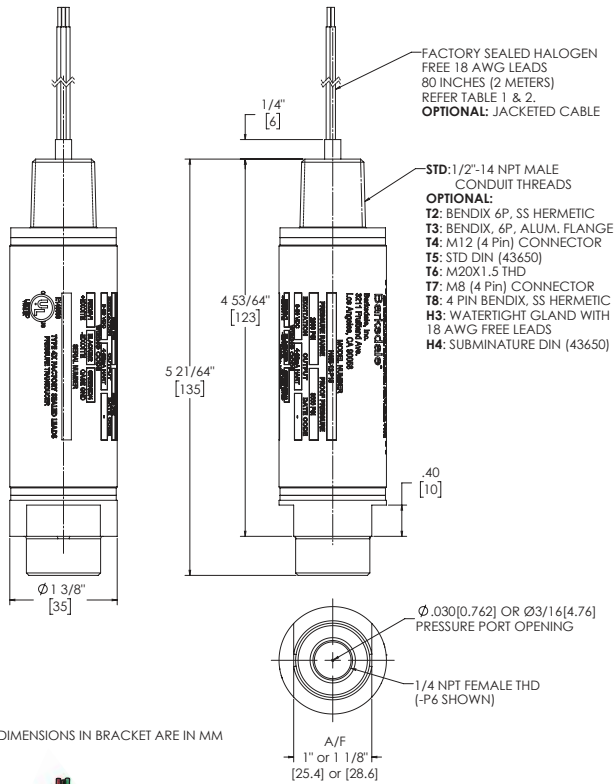


# Transmitter

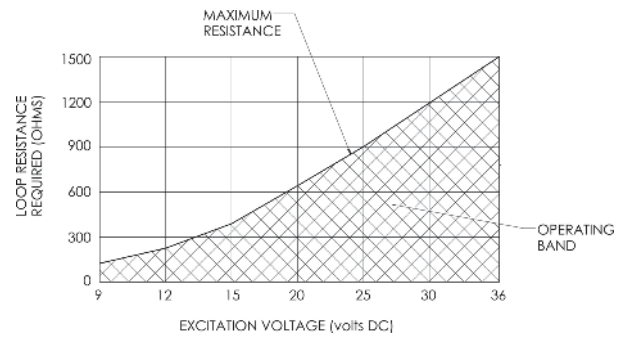
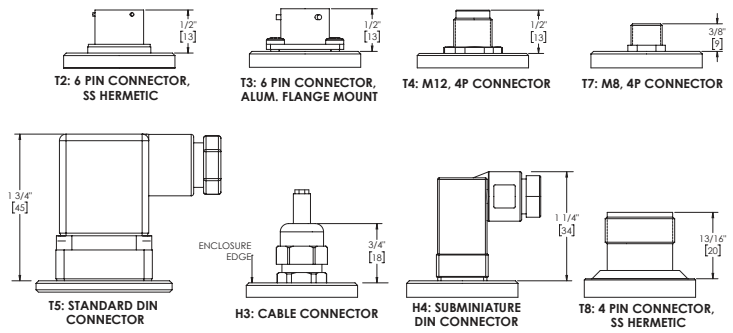
## BiT – Barksdale Intelligent Transmitter

## Series H455, 455, 452

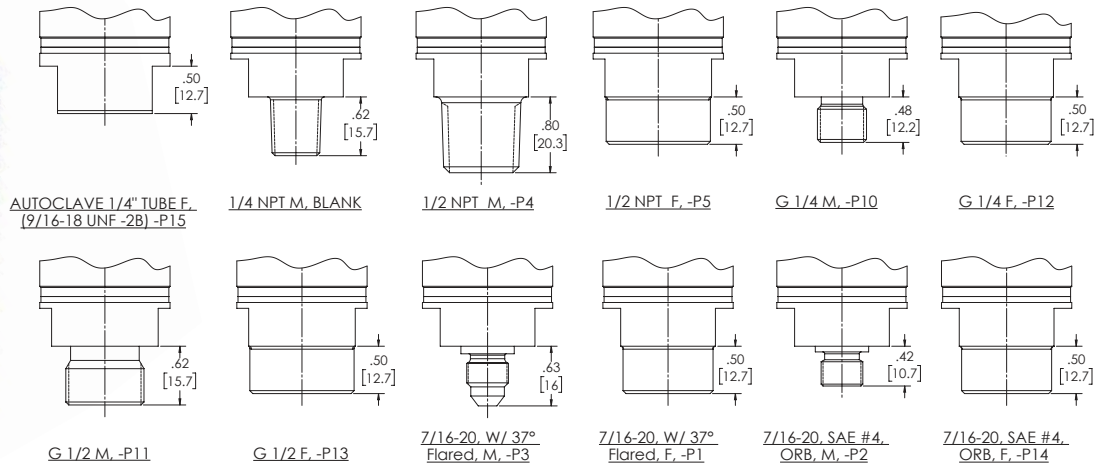
### Technical Drawings



### Standard and Optional Electrical Connections



### Process Connections



# BiT – Barksdale Intelligent Transmitter

## Series H455, 455, 452

### Product Configurator

Example: **H455 T6 -29 BA -P15 -Z17-A1-Z123**

#### Base Model

<b>H455</b>	4 - 20 mA Output with HART® Comm. Protocol
<b>455</b>	4 - 20 mA Output
<b>452</b>	1-5 VDC Output

\* Highlighted options represent those most frequently used. Select these common options for improved availability. (5/21)

#### Electrical Connection

<b>Blank</b>	1/2"-14 NPT Male conduit
<b>T2</b>	6 pin connector, SS Hermetic, PTIH-10-6P
<b>T3</b>	6 pin connector, Alum. Flange Mount, PT02E-10-6P
<b>T4</b>	M12 (4 Pin) connector
<b>T5</b>	Standard DIN (EN 175301-803, Type A)
<b>T6</b>	M20 x 1.5 Male conduit
<b>T7</b>	M8 (4 Pin) connector
<b>T8</b>	4 pin connector, SS Hermetic, PTIH-14S-2P
<b>H3</b>	Watertight Gland with 18AWG Free Leads
<b>H4</b>	Mini DIN (EN 175301-803, Type C)

#### Pressure Unit & Type

<b>Blank</b>	PSI - Sealed gage pressure (standard)
<b>A</b>	PSI - Absolute pressure (Not applicable with "-23" range)
<b>B</b>	Bar - Sealed gage pressure
<b>BA</b>	Bar - Absolute Pressure (ranges start from -1 Bar) (Not applicable with "-23" range)

#### Process Connection

<b>Blank<sup>4</sup></b>	1/4-18 NPT male (standard)
<b>-P6<sup>4</sup></b>	1/4" NPT female
<b>-P4<sup>4</sup></b>	1/2" NPT male
<b>-P5<sup>4</sup></b>	1/2" NPT female
<b>-P10<sup>4</sup></b>	G 1/4, washer seal, male
<b>-P12<sup>4</sup></b>	G 1/4, washer seal, female
<b>-P11<sup>4</sup></b>	G 1/2, washer seal, male
<b>-P13<sup>4</sup></b>	G 1/2, washer seal, female
<b>-P3<sup>4</sup></b>	7/16-20, with 37° flared, male
<b>-P1<sup>4</sup></b>	7/16-20, with 37° flared, female
<b>-P2<sup>4</sup></b>	7/16-20, SAE #4, ORB, male
<b>-P14<sup>4</sup></b>	7/16-20, SAE #4, ORB, female
<b>-P15</b>	HF4 Autoclave, 1/4" tube, female (9/16-18 UNF-2B THD)

#### Pressure Range

<b>-23*</b>	0-29.9" of Hg	0 to -1 Bar
<b>-01</b>	0-15 psi	0-1 Bar
<b>-21</b>	0-30 psi	0-2 Bar
<b>-03</b>	0-50 psi	0-3 Bar
<b>-22</b>	0-60 psi	0-4 Bar
<b>-04</b>	0-100 psi	0-7 Bar
<b>-05</b>	0-150 psi	0-10 Bar
<b>-06</b>	0-200 psi	0-15 Bar
<b>-07</b>	0-300 psi	0-20 Bar
<b>-08</b>	0-500 psi	0-40 Bar
<b>-10</b>	0-1,000 psi	0-70 Bar
<b>-11</b>	0-1,500 psi	0-100 Bar
<b>-12</b>	0-2,000 psi	0-150 Bar
<b>-13</b>	0-3,000 psi	0-200 Bar
<b>-14</b>	0-4,000 psi	0-300 Bar
<b>-15</b>	0-5,000 psi	0-350 Bar
<b>-16</b>	0-6,000 psi	0-400 Bar
<b>-17</b>	0-7,500 psi	0-500 Bar
<b>-18<sup>7</sup></b>	0-10,000 psi	0-700 Bar
<b>-29<sup>8</sup></b>	0-15,000 psi	0-1,000 Bar
<b>-30<sup>8</sup></b>	0-20,000 psi	0-1,400 Bar
<b>-31<sup>8</sup></b>	0-22,000 psi	0-1,500 Bar
<b>-32<sup>8</sup></b>	0-25,000 psi	0-1,700 Bar
<b>-33<sup>8</sup></b>	0-30,000 psi	0-2,000 Bar

#### Options

<b>-ZVxx</b>	Custom voltage output (Available on 452X only). Up to 10VDC. Consult Factory.
<b>-Z17<sup>2</sup></b>	Larger orifice; without pressure surge protector
<b>-SC<sup>5</sup></b>	316 Stainless steel enclosure
<b>-SS<sup>4,6</sup></b>	316L stainless steel wetted material (NACE)
<b>-NC<sup>1,4,5</sup></b>	718 Inconel wetted material (NACE)
<b>-UL<sup>7</sup></b>	cULus approval for -18 range (10k psi) only
<b>-A1</b>	Accuracy BFUL 0.1% FSO (LHR) at 75°F (Consult factory on vacuum [-23] models)
<b>-ZXXX</b>	Special pressure ranges XX - significant digits Y - number of trailing zeros Example: 130 psi calibration: add -Z131
<b>-JXXX</b>	Jacketed cable (available on conduit and gland electrical connections) (in inches)
<b>-WXXX</b>	Custom Length of free leads (Available on Conduit and gland electrical connections) (In Inches)
<b>-D3<sup>8</sup></b>	3 Pin deutsch connector DT04-3P
<b>-D4<sup>8</sup></b>	4 Pin deutsch connector DT04-4P

#### Notes

1. No agency approvals
2. All pressure ranges have built-in pressure surge protector. Add "-Z17" suffix for no snubber; for use with high viscosity media. Refer to Sales drawing for orifice sizes.
3. Ranges with more than 10k psi are available only with -P15 Process Connection
4. Available up to 10,000 psi
5. "-NC" option only available with following pressure ranges: -11, -13, -16 and -18. Consult factory for availability on other pressure ranges. Not available for Vacuum [-23] range and Absolute models [A] & [BA].
6. -SS option is included in -SC option. -SC does not include material of electrical connection. "-UL" option and more than 10k psi ranges only with 17-4PH SS wetted material.
7. -UL option only available for 10,000 psi range. No cULus approval for 10,000 psi range without -UL suffix option. cULus approval standard for all other ranges. -UL only with 17-4 PH SS wetted material
8. Connected to factory sealed halogen free, 18 AWG free leads 12" (3m). Also available with -WXXX and -JXXX options.

### Additional Documents and Accessories

Title	Reference Number
Installation and Maintenance Instructions	272441
HART Installation and Operation Manual	272438
Cable & Connectors	Cable & Connectors. Bulletin #S0115-C
Certificate of Compliance (Found on back of packing slip)	Use Document Title in purchase order. Only available at the time of order.
Certificate of Compliance (Signed document)	
Test Report	
Calibration Test Sheet (Included in product package)	
Material Certification	
Paper Tag	
Metal Tag	

\* Vacuum

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